JC10 Rec'd PCT/PTO 10 DEC 2001

FORM PTO-1390 (REV. 9-2001) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY 'S DOCKET NUMBER: 136.168

U.S. APPLICATION NO. (If known, see 37 CFR 1.5): 10/009917

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/FR00/01619	9 June 2000	11 June 1999

TITLE OF INVENTION: METHOD FOR PROCESSING TELEPHONE CALLS AND TELEPHONE INTERFACE FOR THE IMPLEMENTATION OF THE METHOD

APPLICANT(S) FOR DO/EO/US: Jacky Forestier

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
4. [ ] The US has been elected by the expiration of 19 months from the priority date (Article 31).
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [ ] is attached hereto (required only if not communicated by the International Bureau).
   b. [X] has been communicated by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [X] An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
   a. [X] is attached hereto.
   b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).
7. [ ] Amendments to the claims of the International Aplication under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are attached hereto (required only if not communicated by the International Bureau).
   b. [ ] have been communicated by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [X] have not been made and will not be made.
8. [ ] An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).
9. [X] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). (unexecuted)
10. [ ] An English lanugage translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11 to 20 below concern document(s) or information included:

11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [X] A FIRST preliminary amendment.
14. [ ] A SECOND or SUBSEQUENT preliminary amendment.
15. [X] A substitute specification, and claims.
16. [ ] A change of power of attorney and/or address letter.
17. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
18. [ ] A second copy of the published international application under 35 U.S.C. 154(d)(4).
19. [ ] A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
20. [ ] Other items or information:

JC05 Rec'd PCT/PTO 10 DEC 2001

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/009917	PCT/FR00/01619	136.168

21. ☐ The following fees are submitted:

	CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):		
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO **$1040.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO **$890.00**		
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO **$740.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) **$710.00**		
International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) **$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 890.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$ --	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	$
Total claims	3 - 20 =	0	x **$18.00**	$ --
Independent claims	15 - 3 =	0	x **$84.00**	$ --
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$280.00**	$ --

TOTAL OF ABOVE CALCULATIONS =	$ 890.00	
☐ Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2. +	$ --	
SUBTOTAL =	$ 890.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).	$ --	
TOTAL NATIONAL FEE =	$ 890.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +	$ --	
TOTAL FEES ENCLOSED =	$ 890.00	
	Amount to be refunded:	$
	charged:	$

a. ☒ A check in the amount of $ 890.00 to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-1080. A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. **WARNING:** Information on this form may become public. **Credit card information should not be included on this form.** Provide credit card information and authorization on PTO-2038.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.

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James E. Nilles
NAME

16,663
REGISTRATION NUMBER

December 10, 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Jacky Forestier

Group Art Unit: Not Known

Serial No. 10/009,917

Examiner: Not Known

Filing/Received Date: December 10, 2001

Docket No. 136.168

For: *Method for processing Telephone Calls and Telephone Interface for the Implementation of the Method*

Customer No. 023907

SUPPLEMENTAL PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington DC 20231

Sir:

Please amend the above-captioned patent application as follows. Entry of this Preliminary Amendment is requested prior to calculating the filing fee.

Cancel claims 1-22 and add the following claims 23-40.

23. Method for the processing of telephone calls between callers and called parties according to which the establishing of a telephone communication comprises, for a caller, the making of the connection, and then an utterance enabling the identification of the called party and an identification of the caller on the basis of at least one piece of biometric data of said caller, characterized in that it comprises a verification of this identification on the basis of at least one other piece of biometric data, one of the pieces of data being the voice print, and in that the identification is secured, the security being provided by a verification of the voice print during communications.

24. Method for the processing of telephone calls according to claim 23, characterized in that a piece of biometric data of the caller corresponds to his voice print.

25. Method for the processing of telephone calls according to claim 23, characterized in that a second piece of biometric data corresponds to his fingerprint.

26. Method for the processing of telephone calls according to claim 23, characterized in that the identification comprises an authentication of the piece or pieces of biometric data.

27. Method for the processing of telephone calls according to claim 26, characterized in that the authentication of the piece or pieces of biometric data comprises a verification of the correspondence between the characteristics of a caller and the characteristics previously recorded for said caller.

28. Method for the processing of telephone calls according to claim 26, characterized in that the preliminary recording of the voice print includes a learning process.

29. Method for the processing of telephone calls according to claim 23, characterized in that the checks are carried out randomly during communication.

30. Method for the processing of telephone calls according to claim 23, characterized in that the security furthermore includes asking for a previously allocated confidential code and verification of this code in the event of a non-agreement on at least one characteristic.

31. Method for the processing of telephone calls according to claim 23, characterized in that the utterance comprises a specific characteristic of the called party.

32. Method for the processing of telephone calls according to claim 31, characterized in that the specific characteristic of the called party is his family name.

33. Method for the processing of telephone calls according to claim 23, characterized in that the utterance comprises a specific characteristic of the called party.

34. Method for the processing of telephone calls according to claim 33, characterized in that the specific characteristic of the calling individual is the individual's family name.

35. Telephone interface between caller and telephone network, comprising a module for launching a telephone call and for the identification of the called parties on the basis of a utterance of a caller, and a module for the processing of biometric data of callers enabling the identification of said callers on the basis of a piece of biometric data and the setting up of communications, characterized in that it comprises means for the verification (SV) of the identification on the basis of a second piece of biometric data, one of the pieces of the data being the voice print, and in that these means are capable of verifying the voice print during communication.

36. Interface according to claim 35, characterized in that the module for the processing of biometric data of the callers comprises at least one unit (UYO) for the processing of telephone calls, comprising voice recognition means (RV) and a database (RD) in which

there are recorded characteristic data of persons likely to make calls or to be called, said data containing at least one first piece of biometric data used for the identification of said caller and at least one second piece of biometric data for the verification of this identification, telephone communications being established between a caller and a called party on the basis of the utterance put out by the caller, his identification and the identification of the called party.

37. Interface according to claim 35, characterized in that the means to secure the identification carry out random verifications during communication.

38. Interface according to claim 35, characterized in that the means to secure identification comprises means to ask for a confidential code assigned beforehand to a caller and compare the received code and the code previously recorded for said caller in the case of non-agreement on at least one characteristic.

39. Telecommunications terminal capable of being used for the implementation of the method according to claim 23, comprising fingerprint reading means.

40. Telephone system comprising at least one automatic branch exchange to route the calls between the telephone terminals, characterized in that it comprises at least one unit (UYO for processing telephone calls, comprising voice recognition means (RV) and a database (RD) on which there are recorded characteristic data of persons likely to call or be called, said data containing at least one first piece of biometric data enabling the identification of said caller and at least one second piece of biometric data to verify this identification, one of the pieces of data being a voice print of the caller, the setting up of telephone communications between a

caller and a called party being made on the basis of the utterance sent out by the caller, his identification and the identification of the called party, and in that the identification of the caller is secured by the verification of the voice print during communication.

REMARKS

Claims 1-22 have been canceled and claims 23-40 have been added. Claims 23-40 represent the claims that were submitted in the international PCT application under Article 34.

Entry of the Preliminary Amendment and early consideration and allowance are respectfully requested.

The Commissioner is hereby authorized to charge payment of any extension or additional fees associated with this or any other communication or credit any overpayment to Deposit Account No. 14-1080.

Respectfully submitted,

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Date: April 1, 2002

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

National Phase of PCT/FR00/01619

International Filing Date: June 9, 2000

Inventor: Jacky Forestier

Title: *Method for Processing Telephone Calls and Telephone Interface for the Implementation of the Method*

Priority: French Application No. 99 07444; Filed June 11, 1999

Attorney Docket: 136.168 Customer No. 023907

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
DO/EO/US
Washington DC 20231

Sir:

This Preliminary Amendment is directed to a new U.S. application as identified above. Please enter this preliminary amendment prior to calculating the fees.

Please substitute the attached specification, claims, and abstract (10 pages) for the English translation of the PCT application as filed and use the substitute application for examination purposes.

A marked-up version of the amended claims is attached and entitled *Version With Markings to Show Changes Made*.

REMARKS

This application has been amended to insert headings in the specification, to incorporate revisions made to the claims under Article 34, and to add an Abstract of the Disclosure. The claims are further amended to eliminate the multiple dependencies. Entry of the amendments and early consideration and allowance are respectfully requested.

Respectfully submitted,

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Dated: December 10, 2001

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Version With Markings to Show Changes Made

CLAIMS

We claim:

3. Method for the processing of telephone calls according to claim 1 [or 2], characterized in that a second piece of biometric data corresponds to his fingerprint.

4. Method for the processing of telephone calls according to [any of the above claims] claim 1, characterized in that the identification comprises an authentication of the piece or pieces of biometric data.

6. Method for the processing of telephone calls according to [claims 4 and 5] claim 4, characterized in that the preliminary recording of the voice print includes a learning process.

9. Method for the processing of telephone calls according to [any of the above claims] claim 1, characterized in that the utterance comprises a specific characteristic of the called party.

11. Method for the processing of telephone calls according to [any of the above claims] claim 1, characterized in that the utterance comprises a specific characteristic of the called party.

17. Telecommunications terminal capable of being used for the implementation of the method according to [any of the claims 1 to 12] claim 1, comprising fingerprint reading means.

METHOD FOR PROCESSING TELEPHONE CALLS AND TELEPHONE INTERFACE FOR THE IMPLEMENTATION OF THE METHOD

BACKGROUND OF THE INVENTION

The invention relates to a method for the processing of telephone calls and to a telephone interface for the implementation of the method. It also relates to a telecommunications terminal and a telephone system.

Hitherto, the making of a telephone call has been entirely based on a telephone numbering system defined by the telephone operator and the geographical location for fixed telephones or depending on the operator for mobile telephones. The charge rate for calls is set for example according to the parameters of origin and destination.

Thus, a subscriber is identified by a call number for his or her fixed telephone and by another call number if he also has a mobile telephone.

The management of the numbering plans is cumbersome and is a source of error. The appearance of new operators will further complicate the numbering system for user customers, especially in the case of companies.

OBJECTS AND SUMMARY OF THE INVENTION

The aim of the invention is to simplify methods for the processing of telephone calls.

To this end, the processing method proposed no longer relies on numbering systems as in the case at present.

More particularly, an object of the invention is a method for the processing of telephone calls between callers and called parties according to which the establishing of a telephone communication comprises, for the caller, the making of the connection and then an utterance enabling the identification of the called party, chiefly characterized in that it comprises an identification of the caller on the basis of at least one piece of biometric data pertaining to said caller and a verification of this identification on the basis of at least one other piece of biometric data.

According to one characteristic, a piece of biometric data of the caller corresponds to his or her voice print.

According to another characteristic, a second piece of biometric data corresponds to his or her fingerprint.

According to another characteristic, the identification comprises an authentication of the piece or pieces of biometric data.

The authentication of the piece or pieces of data comprises a verification of the correspondence between the characteristics of a caller and the characteristics previously recorded for said caller.

The preliminary recording of the voice print includes a learning process.

According to another characteristic, the identification is secured.

According to another characteristic, the security is provided by a verification of the voice print during the calls.

To reinforce security, checks are carried out randomly during communication.

It may also be planned to reinforce security by asking for a previously allocated confidential code and for a verification of this code, in the event of a non-agreement with regard to at least one characteristic.

According to another characteristic, the utterance comprises a specific characteristic of the called party.

Advantageously, the specific characteristic of the called party is his or her family name.

According to another characteristic, the utterance comprises a specific characteristic of the calling individual.

Advantageously, the specific characteristic of the calling individual is the individual's family name.

The invention also relates to a telephone interface between caller and telephone network, chiefly characterized in that it comprises a module for launching a telephone call and for the identification of the called parties on the basis of a utterance, and a module for the processing of biometric data of callers enabling the identification of said callers and the setting up of communications.

According to another characteristic, the module for the processing of biometric data of the callers comprises at least one unit U_{YO} for the processing of telephone calls, comprising voice recognition means RV and a database RD in which there are recorded characteristic data of persons likely to make calls or be called, said data containing at least one first piece of biometric data used for the identification of said caller and at least one second piece of biometric data for the verification of this identification, telephone communications being established between a caller and a called party on the basis of the utterance sent out by the caller, his or her identification and the identification of the called party.

According to another characteristic, the interface comprises means to secure the identification.

Advantageously, the means to secure the identification comprise means for the verification of voice prints during calls.

According to another characteristic, the means to secure identification carry out random verifications during calls.

The means to secure the identification may furthermore comprises means to ask for a confidential code assigned beforehand to a caller and compare the received code and the code previously recorded for said caller in the case of non-agreement with respect to at least one characteristic.

The invention also relates to a telecommunications terminal chiefly characterized in that it comprises fingerprint reading means.

The invention also relates to a telephone system comprising at least one automatic branch exchange to route the calls between the telephone terminals, chiefly characterized in that it comprises at least one unit U_{YO} for processing telephone calls, comprising voice recognition means RV and a database RD on which there are recorded characteristic data of persons likely to call or be called, said data containing at least one first piece of biometric data enabling the identification of said caller and at least one second piece of biometric data to verify this identification, the telephone communications between a caller and a called party being made on the basis of the utterance sent out by the caller, his or her identification and the identification of the called party.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention shall appear more clearly from the following description, given by way of a non-restrictive example and with reference to the drawings of which:

- Figure 1 shows a drawing of a telephone system according to the invention;
- Figure 2 is a detailed drawing of an interface between the caller and the network according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following description is made in the case of an exemplary multiple-site company network Y. The interface I, in this case, comprises for example two units (or modules), each being respectively placed in each of the sites of a company. It may have also one or more units (or modules), outside the private network, connected to one or more automatic branch exchanges of the public network.

In this example, a first private automatic branch exchange PABX-D manages the incoming and outgoing calls of a site O and a second private automatic branch exchange PABX-D manages the incoming and outgoing calls of a second site D.

A unit U_{YO} for the processing of the calls of the company Y is capable of receiving a call from a person A of the site 0 wishing to communicate with a person B of the site D.

Similarly, a call-processing unit UYD is capable of receiving a call from a person D. of the site D. wishing to communicate with a person C of the site O.

To this end, each unit U_{YO} and UYD is capable of identifying the caller and the called party.

Hereinafter, we shall describe the processing for calls coming from the site 0, it being known that it is similar in the case of calls coming from the site D., except that these calls will be processed by the unit UYD instead of the unit U_{YO}.

The caller is identified and more precisely authenticated by an analysis of characteristics that are specific to him, in particular, biometric characteristics:

- voice print,
- name (family name)
- fingerprint. In this case, the image of the fingerprint will, for example, be stored on a chip card type of storage medium that the caller will insert into his or her telephone or obtain directly through a peripheral of the telecommunications terminal TA, TB (the mouse). The telecommunications terminals used will be fitted out with means capable of acquiring a fingerprint or reading the corresponding information.

Thus, each employee of the company will have a "profile" recorded in the unit U_{YO}.

The profile corresponds to the set of characteristics specific to each employee.

The called party is identified by a code. Preferably, the code will be his or her (family) name.

The unit U_{YO} stores the code of all the persons likely to use the telephone system of the company Y.

When the caller A has been authenticated and when the called party has been identified, the unit U_{YO} sends the message from the caller to the automatic branch exchange PABX-D.

The automatic branch exchange switches will have previously memorized a number corresponding to each person likely to make calls. These numbers will have been transmitted and stored by the unit U_{YO}.

When the unit U_{YO} has carried out the authentication of the caller A, it communicates the number assigned to this caller and the one assigned to the called party to set up the call.

The processing unit U_{YO} is shown in a detailed view in figure 2.

This unit U_{YO} has a database BD recording the characteristics of all the people likely to use the system.

The unit also has a verification system SV comprising a voice recognition unit RVB and a computation unit UC capable of carrying out the processing operations needed in the case of the verification of fingerprints and/or the comparison of secret codes.

A secret code assigned to each user before any communication could indeed be requested by the system if one of the three characteristics is not recognized (i.e. if it is rejected) by the verification system SV.

Naturally, the voice recognition unit RV follows the usual principle, namely:

- learning,
- checking,
- the adaptation to the module.

In order to secure the system, it is planned that the unit U_{YO} will carry out the following operations:

- a verification of the voice print at the start of the call and randomly during the call;

It may be planned to this effect that the verification control program executed by the verification unit RV will integrate a random command;

- the request for sending the secret code by the caller. This code may correspond to a DTMF sequence (entered by the keypad of the telephone). The code identifies the caller and the authenticator in the event of failure following the verification of one of the characteristics of the called party (voice print, name, fingerprint).

A double authentication of the callers by voice authentication and checking of the name with checking of the fingerprint, so as to secure the system and apply the charge rate to the caller without risk of error.

The calling/called individuals no longer have any telephone number. They are

identified as unique individuals by at least one "human" characteristic specific to the individual. An individual may therefore make the phone calls from any telephone (outside the system) provided that he is identified by the system. He will be invoiced according to his or her profile, and this will be particularly valuable for company employees on the move who are a client's premises.

It may be planned, as also shown in the drawing of figure 1, to have one or more processing units U_E outside the private company network, linked with one or more automatic branch exchanges of the public switched telephone network STN so as to broaden the system just described to the public network. In this case, the units U_E connected to different automatic branch exchanges comprise a database combining the specific characteristics of persons wishing to benefit from the system that has just been described.

In any case, the unit U_E is capable of processing calls from persons moving over several sites of the private network of the company Y.

The interface that has just been described is independent of the telecommunications terminals and of the networks, whether it is the STN, ISDN or Internet network.

Furthermore, any initial verification based on the fingerprint and then on a double authentication by means of an "open sesame" name, to which there is added a voice verification can be used to secure the identification of the caller. The fact of verifying the voice print during the communication reinforces this method.

CLAIMS

We claim:

1. Method for the processing of telephone calls between callers and called parties according to which the establishing of a telephone communication comprises, for a caller, the making of the connection, and then an utterance enabling the identification of the called party and an identification of the caller on the basis of at least one piece of biometric data of said caller, characterized in that it comprises a verification of this identification on the basis of at least one other piece of biometric data, one of the pieces of data being the voice print, and in that the identification is secured, the security being provided by a verification of the voice print during communications.

2. Method for the processing of telephone calls according to claim 1, characterized in that a piece of biometric data of the caller corresponds to his voice print.

3. Method for the processing of telephone calls according to claim 1, characterized in that a second piece of biometric data corresponds to his fingerprint.

4. Method for the processing of telephone calls according to claim 1, characterized in that the identification comprises an authentication of the piece or pieces of biometric data.

5. Method for the processing of telephone calls according to claim 4, characterized in that the authentication of the piece or pieces of biometric data comprises a verification of the correspondence between the characteristics of a caller and the characteristics previously recorded for said caller.

6. Method for the processing of telephone calls according to claim 4, characterized in that the preliminary recording of the voice print includes a learning process.

7. Method for the processing of telephone calls according to claim 1, characterized in that the checks are carried out randomly during communication.

8. Method for the processing of telephone calls according to claim 1, characterized in that the security furthermore includes asking for a previously allocated confidential code and verification of this code in the event of a non-agreement on at least one characteristic.

9. Method for the processing of telephone calls according to claim 1, characterized in that the utterance comprises a specific characteristic of the called party.

10. Method for the processing of telephone calls according to claim 9, characterized in that the specific characteristic of the called party is his family name.

11. Method for the processing of telephone calls according to claim 1, characterized in that the utterance comprises a specific characteristic of the called party.

12. Method for the processing of telephone calls according to claim 11, characterized in that the specific characteristic of the calling individual is the individual's family name.

13. Telephone interface between caller and telephone network, comprising a module for launching a telephone call and for the identification of the called parties on the basis of a utterance of a caller, and a module for the processing of biometric data of callers enabling the identification of said callers on the basis of a piece of biometric data and the setting up of communications, characterized in that it comprises means for the verification (SV) of the identification on the basis of a second piece of biometric data, one of the pieces of the data being the voice print, and in that these means are capable of verifying the voice print during communication.

14. Interface according to claim 13, characterized in that the module for the processing of biometric data of the callers comprises at least one unit (U_{YO}) for the processing of telephone calls, comprising voice recognition means (RV) and a database (RD) in which there are recorded characteristic data of persons likely to make calls or to be called, said data containing at least one first piece of biometric data used for the identification of said caller and at least one second piece of biometric data for the verification of this identification, telephone communications being established between a caller and a called party on the basis of the utterance put out by the caller, his identification and the identification of the called party.

15. Interface according to claim 13, characterized in that the means to secure the identification carry out random verifications during communication.

16. Interface according to claim 13, characterized in that the means to secure identification comprises means to ask for a confidential code assigned beforehand to a caller and compare the received code and the code previously recorded for said caller in the case of non-agreement on at least one characteristic.

17. Telecommunications terminal capable of being used for the implementation of the method according to claim 1, comprising fingerprint reading means.

18. Telephone system comprising at least one automatic branch exchange to route the calls between the telephone terminals, characterized in that it comprises at least

one unit (U_{YO} for processing telephone calls, comprising voice recognition means (RV) and a database (RD) on which there are recorded characteristic data of persons likely to call or be called, said data containing at least one first piece of biometric data enabling the identification of said caller and at least one second piece of biometric data to verify this identification, one of the pieces of data being a voice print of the caller, the setting up of telephone communications between a caller and a called party being made on the basis of the utterance sent out by the caller, his identification and the identification of the called party, and in that the identification of the caller is secured by the verification of the voice print during communication.

METHOD FOR PROCESSING TELEPHONE CALLS AND TELEPHONE INTERFACE FOR THE IMPLEMENTATION OF THE METHOD

ABSTRACT OF THE DISCLOSURE

A method for processing telephone calls between callers and called parties, which consists in establishing a telephone communication comprising dialing by the caller, then an utterance enabling the caller's identification and the identification of the responder. The method for processing calls has voice recognition (RV) and a database (RD) wherein are recorded characteristic data of persons likely to call or to be called, so as to enable telephone communication to be established between a caller and a responder on the basis of an utterance from the caller enabling the unit to identify the caller and the responder.

2/PRTS

METHOD FOR PROCESSING TELEPHONE CALLS AND TELEPHONE INTERFACE FOR THE IMPLEMENTATION OF THE METHOD

The invention relates to a method for the processing of telephone calls and to a telephone interface for the implementation of the method. It also relates to a telecommunications terminal and a telephone system.

Hitherto, the making of a telephone call has been entirely based on a telephone numbering system defined by the telephone operator and the geographical location for fixed telephones or depending on the operator for mobile telephones. The charge rate for calls is set for example according to the parameters of origin and destination.

Thus, a subscriber is identified by a call number for his or her fixed telephone and by another call number if he also has a mobile telephone.

The management of the numbering plans is cumbersome and is a source of error. The appearance of new operators will further complicate the numbering system for user customers, especially in the case of companies.

The aim of the invention is to simplify methods for the processing of telephone calls.

To this end, the processing method proposed no longer relies on numbering systems as in the case at present.

More particularly, an object of the invention is a method for the processing of telephone calls between callers and called parties according to which the establishing of a telephone communication comprises, for the caller, the making of the connection and then an utterance enabling the identification of the called party, chiefly characterized in that it comprises an identification of the caller on the basis of at least one piece of biometric data pertaining to said caller and a verification of this identification on the basis of at least one other piece of biometric data.

According to one characteristic, a piece of biometric data of the caller corresponds to his or her voice print.

According to another characteristic, a second piece of biometric data corresponds to his or her fingerprint.

According to another characteristic, the identification comprises an authentication of the piece or pieces of biometric data.

The authentication of the piece or pieces of data comprises a verification of the correspondence between the characteristics of a caller and the characteristics previously recorded for said caller.

The preliminary recording of the voice print includes a learning process.

According to another characteristic, the identification is secured.

According to another characteristic, the security is provided by a verification of the voice print during the calls.

To reinforce security, checks are carried out randomly during communication.

It may also be planned to reinforce security by asking for a previously allocated confidential code and for a verification of this code, in the event of a non-agreement with regard to at least one characteristic.

According to another characteristic, the utterance comprises a specific characteristic of the called party.

Advantageously, the specific characteristic of the called party is his or her family name.

According to another characteristic, the utterance comprises a specific characteristic of the calling individual.

Advantageously, the specific characteristic of the calling individual is the individual's family name.

The invention also relates to a telephone interface between caller and telephone network, chiefly characterized in that it comprises a module for launching a telephone call and for the identification of the called parties on the basis of a utterance, and a module for the processing of biometric data of callers enabling the identification of said callers and the setting up of communications.

According to another characteristic, the module for the processing of biometric data of the callers comprises at least one unit U_{YO} for the processing of telephone calls, comprising voice recognition means RV and a database RD in which there are recorded characteristic data of persons likely to make calls or be called, said data containing at least one first piece of biometric data used for the identification of said caller and at least one second piece of biometric data for the verification of this identification, telephone communications being established between a caller and a called party on the basis of the utterance sent out by the caller, his or her

identification and the identification of the called party.

According to another characteristic, the interface comprises means to secure the identification.

Advantageously, the means to secure the identification comprise means for the verification of voice prints during calls.

According to another characteristic, the means to secure identification carry out random verifications during calls.

The means to secure the identification may furthermore comprises means to ask for a confidential code assigned beforehand to a caller and compare the received code and the code previously recorded for said caller in the case of non-agreement with respect to at least one characteristic.

The invention also relates to a telecommunications terminal chiefly characterized in that it comprises fingerprint reading means.

The invention also relates to a telephone system comprising at least one automatic branch exchange to route the calls between the telephone terminals, chiefly characterized in that it comprises at least one unit U_{YO} for processing telephone calls, comprising voice recognition means RV and a database RD on which there are recorded characteristic data of persons likely to call or be called, said data containing at least one first piece of biometric data enabling the identification of said caller and at least one second piece of biometric data to verify this identification, the telephone communications between a caller and a called party being made on the basis of the utterance sent out by the caller, his or her identification and the identification of the called party.

Other features and advantages of the invention shall appear more clearly from the following description, given by way of a non-restrictive example and with reference to the drawings of which:

- Figure 1 shows a drawing of a telephone system according to the invention;
- Figure 2 is a detailed drawing of an interface between the caller and the network according to the invention.

The following description is made in the case of an exemplary multiple-site company network Y. The interface I, in this case, comprises for example two units (or modules), each being respectively placed in each of the sites of a company. It

may have also one or more units (or modules), outside the private network, connected to one or more automatic branch exchanges of the public network.

In this example, a first private automatic branch exchange PABX-D manages the incoming and outgoing calls of a site O and a second private automatic branch exchange PABX-D manages the incoming and outgoing calls of a second site D.

A unit U_{YO} for the processing of the calls of the company Y is capable of receiving a call from a person A of the site 0 wishing to communicate with a person B of the site D.

Similarly, a call-processing unit UYD is capable of receiving a call from a person D. of the site D. wishing to communicate with a person C of the site O.

To this end, each unit U_{YO} and UYD is capable of identifying the caller and the called party.

Hereinafter, we shall describe the processing for calls coming from the site 0, it being known that it is similar in the case of calls coming from the site D., except that these calls will be processed by the unit UYD instead of the unit U_{YO}.

The caller is identified and more precisely authenticated by an analysis of characteristics that are specific to him, in particular, biometric characteristics:

- voice print,
- name (family name)
- fingerprint. In this case, the image of the fingerprint will, for example, be stored on a chip card type of storage medium that the caller will insert into his or her telephone or obtain directly through a peripheral of the telecommunications terminal TA, TB (the mouse). The telecommunications terminals used will be fitted out with means capable of acquiring a fingerprint or reading the corresponding information.

Thus, each employee of the company will have a "profile" recorded in the unit U_{YO}.

The profile corresponds to the set of characteristics specific to each employee.

The called party is identified by a code. Preferably, the code will be his or her (family) name.

The unit U_{YO} stores the code of all the persons likely to use the telephone system of the company Y.

When the caller A has been authenticated and when the called party has been

identified, the unit U_{YO} sends the message from the caller to the automatic branch exchange PABX-D.

The automatic branch exchange switches will have previously memorized a number corresponding to each person likely to make calls. These numbers will have been transmitted and stored by the unit U_{YO}.

When the unit U_{YO} has carried out the authentication of the caller A, it communicates the number assigned to this caller and the one assigned to the called party to set up the call.

The processing unit U_{YO} is shown in a detailed view in figure 2.

This unit U_{YO} has a database BD recording the characteristics of all the people likely to use the system.

The unit also has a verification system SV comprising a voice recognition unit RVB and a computation unit UC capable of carrying out the processing operations needed in the case of the verification of fingerprints and/or the comparison of secret codes.

A secret code assigned to each user before any communication could indeed be requested by the system if one of the three characteristics is not recognized (i.e. if it is rejected) by the verification system SV.

Naturally, the voice recognition unit RV follows the usual principle, namely:

- learning,
- checking,
- the adaptation to the module.

In order to secure the system, it is planned that the unit U_{YO} will carry out the following operations:

- a verification of the voice print at the start of the call and randomly during the call;

It may be planned to this effect that the verification control program executed by the verification unit RV will integrate a random command;

- the request for sending the secret code by the caller. This code may correspond to a DTMF sequence (entered by the keypad of the telephone). The code identifies the caller and the authenticator in the event of failure following the verification of one of the characteristics of the called party (voice print, name,

fingerprint).

A double authentication of the callers by voice authentication and checking of the name with checking of the fingerprint, so as to secure the system and apply the charge rate to the caller without risk of error.

The calling/called individuals no longer have any telephone number. They are identified as unique individuals by at least one "human" characteristic specific to the individual. An individual may therefore make the phone calls from any telephone (outside the system) provided that he is identified by the system. He will be invoiced according to his or her profile, and this will be particularly valuable for company employees on the move who are a client's premises.

It may be planned, as also shown in the drawing of figure 1, to have one or more processing units U_E outside the private company network, linked with one or more automatic branch exchanges of the public switched telephone network STN so as to broaden the system just described to the public network. In this case, the units U_E connected to different automatic branch exchanges comprise a database combining the specific characteristics of persons wishing to benefit from the system that has just been described.

In any case, the unit U_E is capable of processing calls from persons moving over several sites of the private network of the company Y.

The interface that has just been described is independent of the telecommunications terminals and of the networks, whether it is the STN, ISDN or Internet network.

Furthermore, any initial verification based on the fingerprint and then on a double authentication by means of an "open sesame" name, to which there is added a voice verification can be used to secure the identification of the caller. The fact of verifying the voice print during the communication reinforces this method.

CLAIMS

1. Method for the processing of telephone calls between callers and called parties according to which the establishing of a telephone communication comprises, for a caller, the making of the connection, and then an utterance enabling the identification of the called party, characterized in that it comprises an identification of the caller on the basis of at least one piece of biometric data pertaining to said caller and a verification of this identification on the basis of at least one other piece of biometric data.

2. Method for the processing of telephone calls according to claim 1, characterized in that a piece of biometric data of the caller corresponds to his or her voice print.

3. Method for the processing of telephone calls according to claim 1 or 2, characterized in that a second piece of biometric data corresponds to his or her fingerprint.

4. Method for the processing of telephone calls according to any of the above claims, characterized in that the identification comprises an authentication of the piece or pieces of biometric data.

5. Method for the processing of telephone calls according to claim 4, characterized in that the authentication of the piece or pieces of biometric data comprises a verification of the correspondence between the characteristics of a caller and the characteristics previously recorded for said caller.

6. Method for the processing of telephone calls according to claims 4 and 5, characterized in that the preliminary recording of the voice print includes a learning process.

7. Method for the processing of telephone calls according to any of the above claims, characterized in that the identification is secured.

8. Method for the processing of telephone calls according to claim 7, characterized in that the security is provided by a verification of the voice print during the communications.

9. Method for the processing of telephone calls according to claim 8, characterized in that checks are carried out randomly during communications.

10. Method for the processing of telephone calls according to claim 7,

characterized in that the security furthermore includes asking for a previously allocated confidential code and a verification of this code in the event of a non-agreement on at least one characteristic.

11. Method for the processing of telephone calls according to any of the above claims, characterized in that the utterance comprises a specific characteristic of the called party.

12. Method for the processing of telephone calls according to claim 11, characterized in that the specific characteristic of the called party is his or her family name.

13. Method for the processing of telephone calls according to any of the above claims, characterized in that the utterance comprises a specific characteristic of the calling individual.

14. Method for the processing of telephone calls according to claim 13, characterized in that the specific characteristic of the calling individual is the individual's family name.

15. Telephone interface between caller and telephone network, characterized in that it comprises a module for launching a telephone call and for the identification of the called parties on the basis of a utterance, and a module for the processing of biometric data of callers enabling the identification of said callers and the setting up of communications.

16. Interface according to claim 15, characterized in that the module for the processing of biometric data of the callers comprises at least one unit (U_{YO}) for the processing of telephone calls, comprising voice recognition means (RV) and a database (RD) in which there are recorded characteristic data of persons likely to make calls or be called, said data containing at least one first piece of biometric data used for the identification of said caller and at least one second piece of biometric data for the verification of this identification, telephone communications being established between a caller and a called party on the basis of the utterance sent out by the caller, his or her identification and the identification of the called party.

17. Interface according to claim 15 or 16, characterized in that it comprises means to secure the identification.

18. Interface according to claim 17, characterized in that the means to secure

the identification comprise means for the verification of voice prints during communications.

19. Interface according to claim 17, characterized in that the means to secure identification carry out random verifications during communication.

20. Interface according to claim 17, characterized in that the means to secure the identification may furthermore comprises means to ask for a confidential code assigned beforehand to a caller and compare the received code and the code previously recorded for said caller in the case of non-agreement on at least one characteristic.

21. Telecommunications terminal characterized in that it comprises fingerprint reading means.

22. Telephone system comprising at least one automatic branch exchange to route the calls between the telephone terminals, characterized in that it comprises at least one unit (U_{YO}) for processing telephone calls, comprising voice recognition means (RV) and a database (RD) on which there are recorded characteristic data of persons likely to call or be called, said data containing at least one first piece of biometric data enabling the identification of said caller and at least one second piece of biometric data to verify this identification, the telephone communications between a caller and a called party being made on the basis of the utterance sent out by the caller, his or her identification and the identification of the called party.

FIG. 1

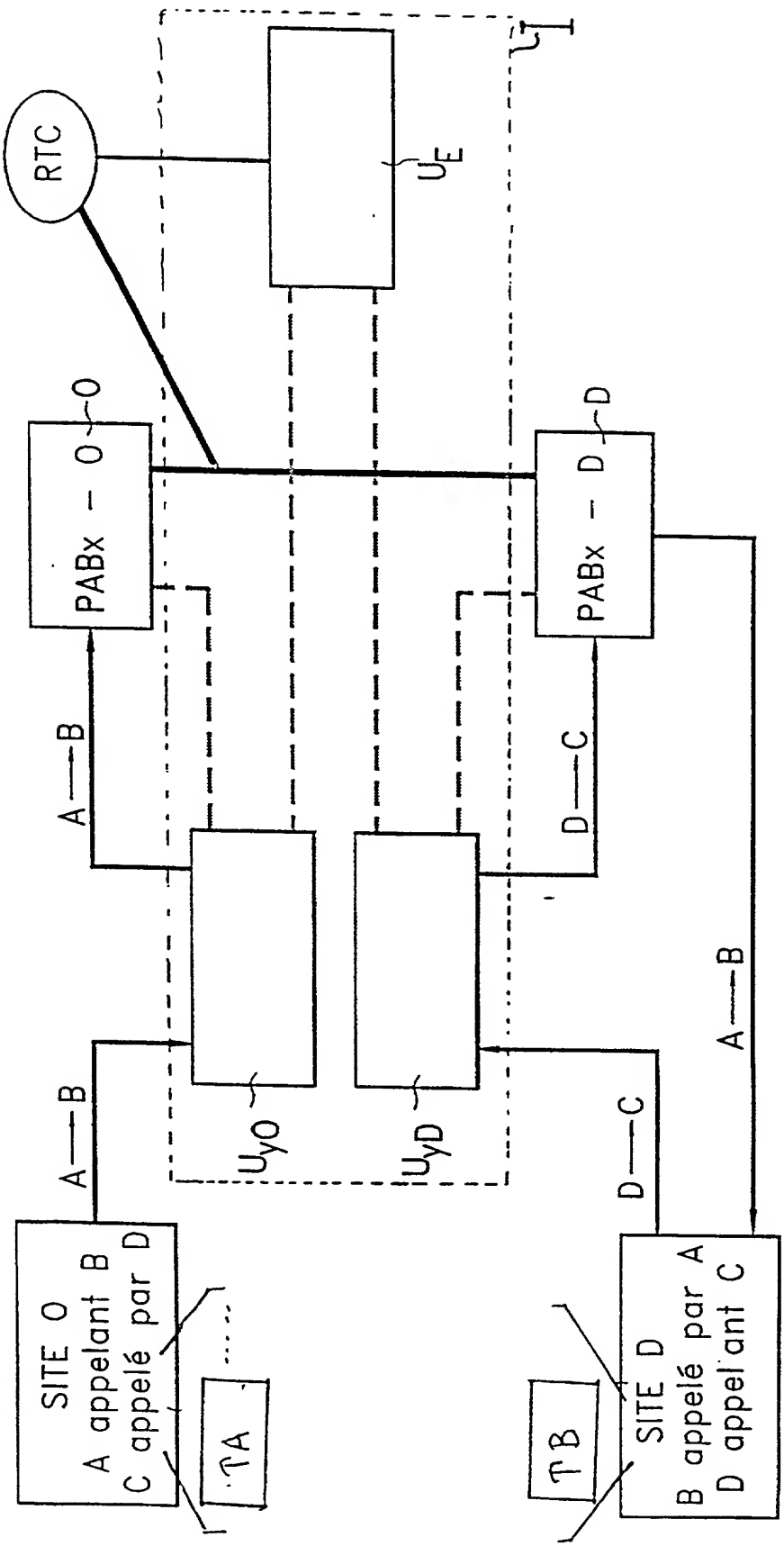
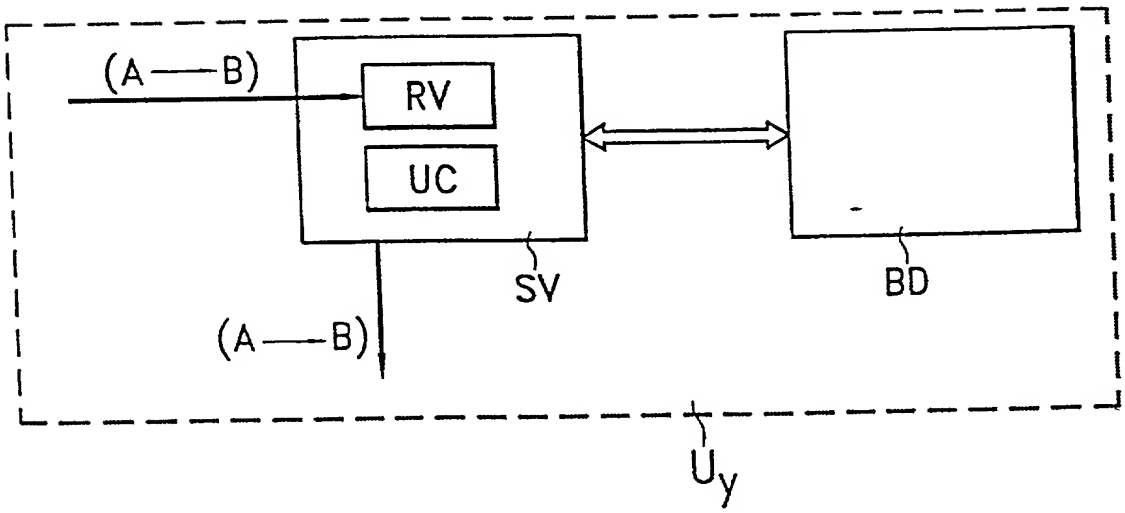


FIG.2



COMBINED DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) and POWER OF ATTORNEY

☐ Declaration Submitted with Initial Filing
OR
☑ Declaration Submitted after Initial Filing (surcharge (37 CFR 1.16(e)) required)

Attorney Docket Number: 136.168
First Named Inventor: Jacky Forestier
COMPLETE IF KNOWN
Application Number: 10/009,917
Filing Date: December 10, 2001
Group Art Unit: Not Known
Examiner Name: Not Known

As a below named inventor, I hereby declare that:

My residence, mailing address, and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

Method for Processing Telephone Calls and Telephone Interface for the Implementation of the Method

the specification of which
☐ is attached hereto
OR
☑ was filed on December 10, 2001 as United States Application Serial No. 10,009,917, was amended on December 10, 2001, and is a national phase of International Application No. PCT/FR00/01012.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to the patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)			Priority Not Claimed	Certified Copy Attached?
99 07444 (Number)	France (Country)	June 11, 1999 (Foreign Filing Date)	☐	☐ Yes ☑ No
PCT/FR00/01619 (Number)	France (Country)	June 9, 2000 (Foreign Filing Date)	☐	☐ Yes ☐ No
(Number)	(Country)	(Foreign Filing Date)	☐	☐ Yes ☐ No

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:

I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

(Application Number) (Filing Date)

(Application Number) (Filing Date)

☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

COMBINED DECLARATION – Utility or Design Patent Application and POWER OF ATTORNEY

As a below-named inventor, I hereby appoint the registered practitioners named below as my/our attorney(s) or *agent(s)* to prosecute this application, and to transact all business in the Patent and Trademark Office connected therewith:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor

Given Name (first & middle [if any]) and Family Name or Surname: Jacky Forestier

Inventor's Signature: Jacky FORESTIER. Date: 7.3.02.

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modifié par Jacky FORESTIER.

Jacky FORESTIER.

United States Patent & Trademark Office

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(Document title)

☐ Page(s)__________ of ____________________ were not present for scanning.
(Document title)

☑ ***Scanned copy is best available.*** There are only 2 drawings, not 22.